



Subpart P

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Objectives

- Identify hazards associated with portable hand and power tools
- Identify specific precautions
- Identify general safety precautions

General Safety Precautions

- Keep all tools in good condition
 - Regular maintenance
- Right tool for the right job
- Inspect for damage
- Manufacturer's instructions



General Safety Precautions

Hazard Prevention

**Keep all tools in good condition
with regular maintenance**

Use the right tool for the job

**Examine each tool for damage
before use**

**Operate according to the
manufacturer's instructions**

**Provide and use the proper
protective equipment**

General Safety Precautions (cont.)



- PPE
- Safe work procedures
 - Responsibility of the employer

General Safety Precautions (cont.)

- 1910.242(a)
 - Employers responsibility
 - Safe condition of tools
 - Including personal tools

Hand Tools

- Non powered
- Largest hazard
 - Misuse
 - Improper maintenance
- Safe use
 - Direction of knives and blades
 - Sharp knives and blades
 - Safe working surfaces

Hand Tools (cont.)



Power Tools

- Classification by power source
 - Electric
 - Pneumatic
 - Liquid Fuel
 - Hydraulic
 - Powder Actuated

Power Tools (cont.)

- 1910.243 (a)(1)
 - Upper blade guard
 - Lower blade guard
 - Automatically returns to starting position



Power Tools (cont.)

- 1910.243(a)(2)
 - Constant Pressure Switch
 - Saws and Chainsaws
 - Lock-on control (single motion turnoff)



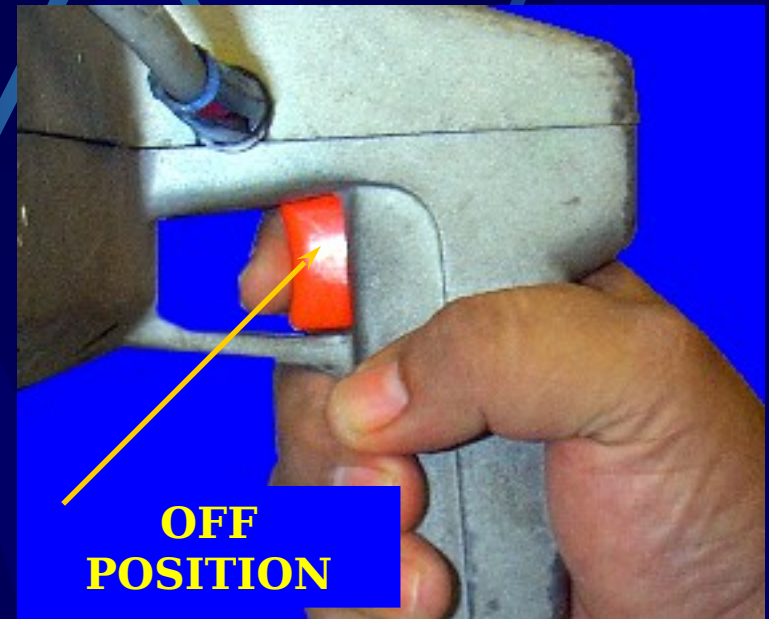
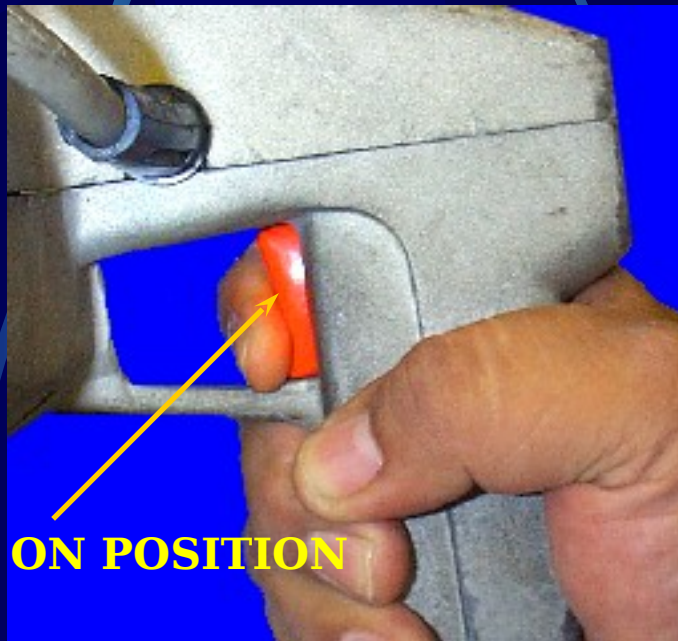
Power Tools (cont.)

- Momentary Contact “on/off” switch
 - Drills
 - Tappers
 - Fasteners
 - Drivers
 - Grinders – Greater than 2” in dia.
 - Disc and Belt Sanders
 - Reciprocating Saws

Power Tools (cont.)

- Positive “on/off” controls
 - Disc Sanders – w/ discs 2” in dia. Or less
 - Routers
 - Trimmers
 - Shears
 - Jig Saws – w/ blade $\frac{1}{4}$ ” wide or less

Power Tools (cont.)



Power Tools (cont.)

- 1910.243(a)(3)
 - Portable belt sanding machines
 - Guard nip point where belt runs onto pulley
 - Guard unused run of belt

Power Tools (cont.)

- Never carry tools by cords
 - Never pull cords to disconnect
- Disconnect tools when not in use or during maintenance
- Secure work with vice or clamp
 - Allows two hands for working
- Users manual



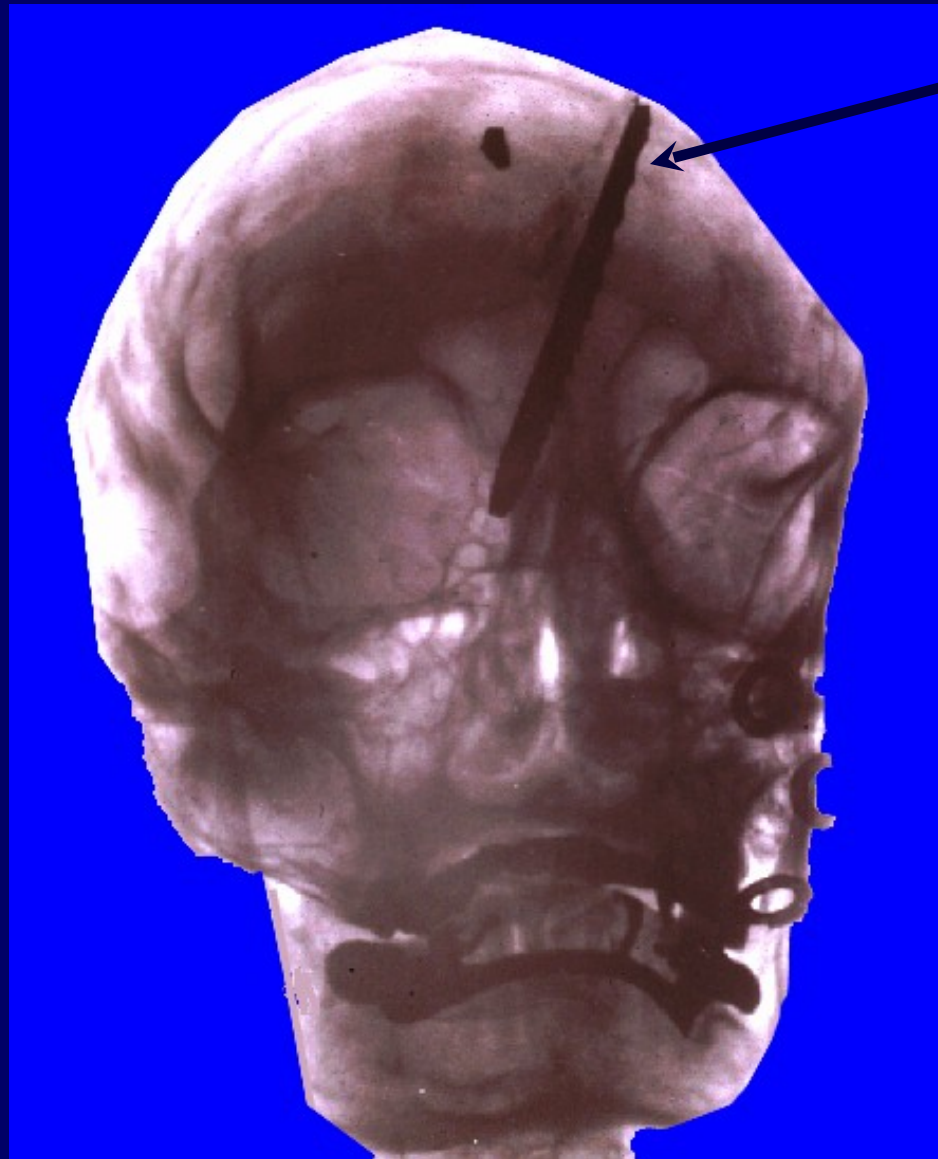
Power Tools (cont.)

- Proper apparel
 - Loose clothing, hair, or jewelry
- Tag all damaged tools “Out of Service”
- Keep blades and knives sharpened

Power Tools (cont.)

- 1910.243(a)(4)
 - Cracked saws
 - Removed from service

Disintegrating saw blade and parts strike operator in the head and face



Saw blade



Electric Tools

- Burns
- Slight Shock
 - Indirect injuries - Ladders
- Fibrillation

Electric Tools (cont.)

- 1910.243(a)(5)
 - Grounding
 - Double insulated
 - Recognition
 - GFCI
 - Wet or damp locations

Electric Tools (cont.)



Electric Tools (cont.)



Electric Tools (cont.)

Double Insulated Marking



Powered Abrasive Wheels

- Flying fragments
 - PPE
- Ring test – 1910.243(c)(5)(i)
- Mounting
 - Follow mfg's instructions

Abrasive Wheels (cont.)



Max RPM



Abrasive Wheels (cont.)

- Start up
 - Not directly in front
- Guards – 1910.243(c)(1) – (c)(4)
 - Protect from moving wheel surface
 - Protect from breaking wheel fragments
 - Exception – When work protects the operator

Abrasive Wheels (cont.)



Abrasive Wheels (cont.)

- 1910.243(c)(1)(i)
 - Exceptions
 - Wheels used within the work
 - 2" or smaller in diameter
 - Cones, plugs, etc. where work offers protections

Abrasive Wheels (cont.)

- 1910.243(c)(6) – Other exclusions
 - Natural sandstone wheels
 - Metal, wooden, cloth, or paper discs having a layer of abrasive surface

Powder Actuated Tools

- 1910.243(d)(1)
 - Meet ANSI A10.3 – 1970
 - PPE
 - Eye Protection
 - Head and face depending on conditions

Powder Actuated Tools (cont.)

- 1910.243(d)(2)
 - Protective shield at least 3.5" in diameter
 - Designed to confine flying fragments



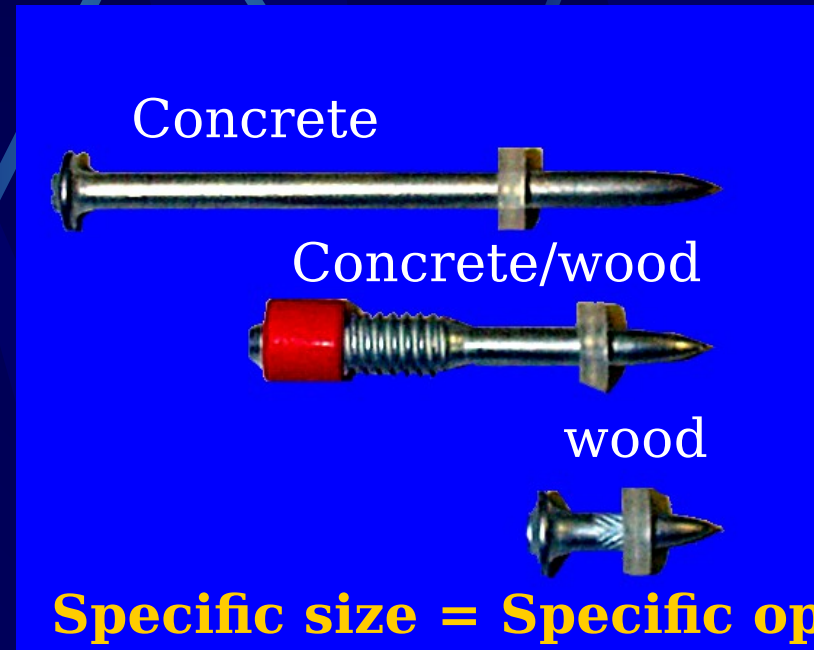
Powder Actuated Tools (cont.)

● 1910.243 (d)(2)

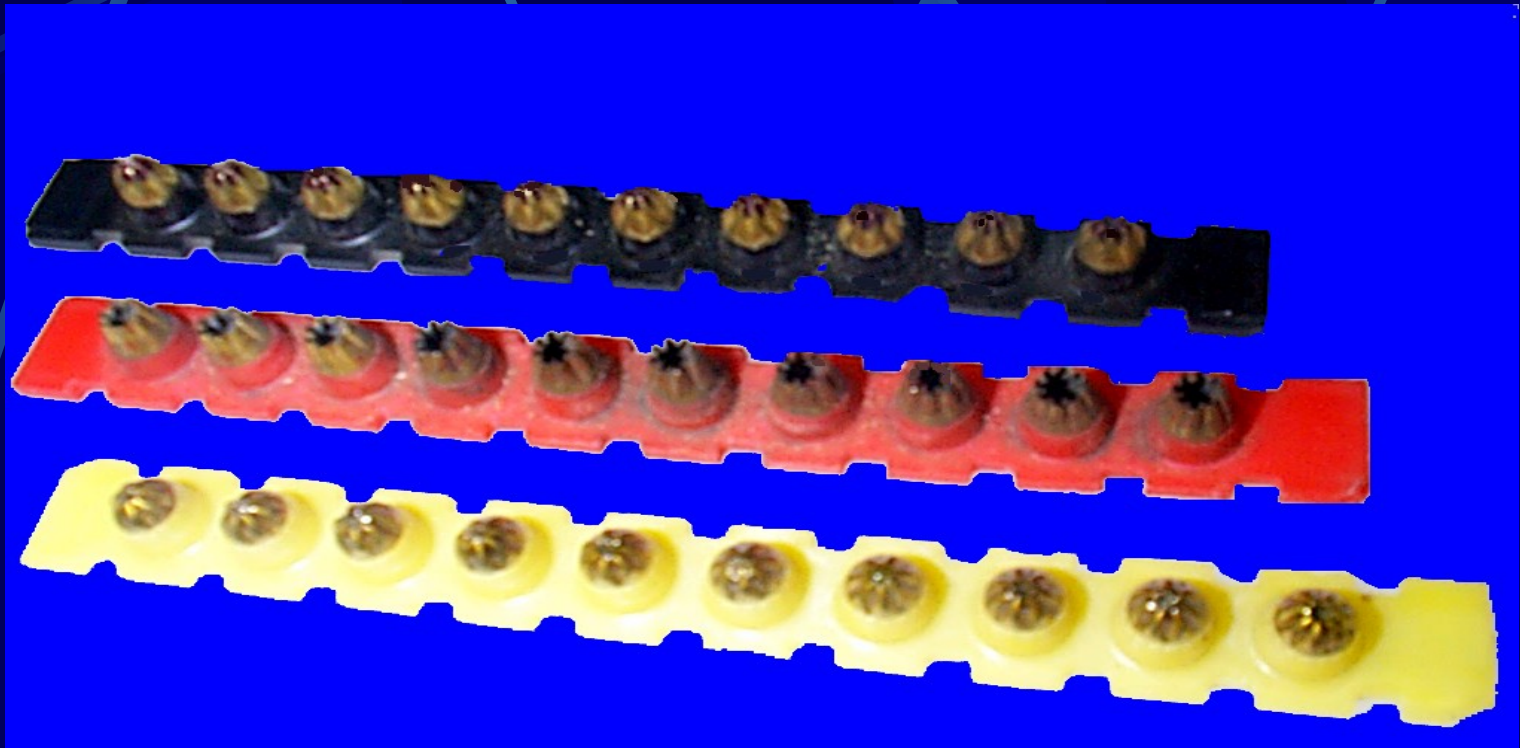
- Firing relies on at least two separate and distinct operations
- Firing Mechanism must prevent the tool from firing:
 - During loading
 - While preparing to fire
 - If dropped

Powder Actuated Tools (cont.)

- 1910.243(d)(3)
 - Fasteners used in tool specifically designed for that tool
 - Designed for the material that is being driven into



Charges used in powder actuated tools



Right size charge with right size fastener

Powder Actuated Tools (cont.)

- 1910.243(d)(4)
 - Tools must be inspected before use
 - Defective tools taken out of service immediately
 - Tools not loaded until just before intended firing

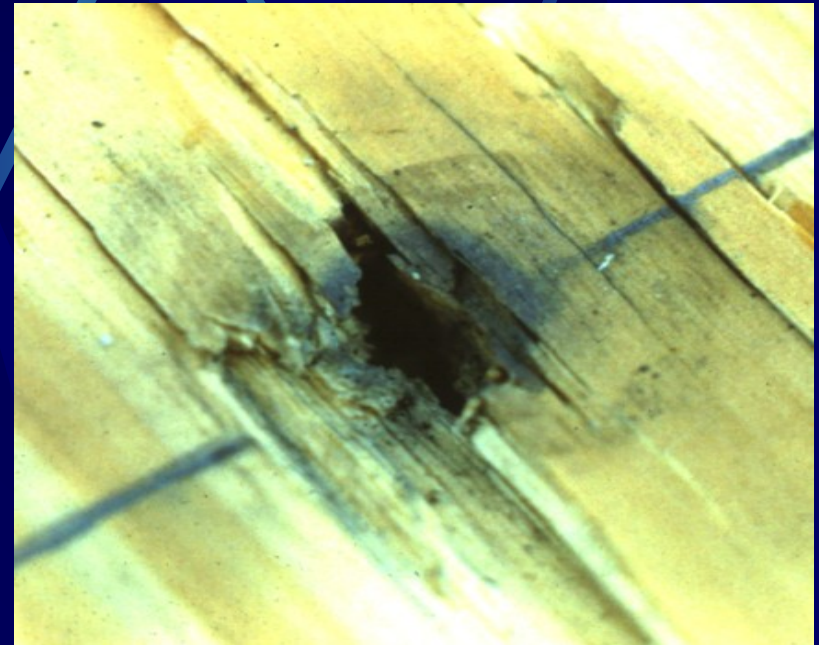
Loaded or empty tools are never to be pointed at anyone

Powder Actuated Tools (cont.)

- Fasteners not driven into:
 - Very hard or brittle materials
 - Cast iron
 - Glazed tile
 - Surface-hardened steel
 - Glass block
 - Live rock
 - Face brick
 - Hollow tile

Powder Actuated Tools

- Avoid driving into easily penetrated material
 - Unless backed
- Do not use tools in explosive or flammable atmosphere



Powder Actuated Tools (cont.)

- Operators must be trained in the operation of this tool
 - Manufacturer's training



HILTI **H 875182**

QUALIFIED OPERATOR
Powder Actuated Tools

DATE: 22 Jan 92

336528074 6 JUN 56
SOCIAL SECURITY NO. DATE OF BIRTH

This certifies that Raymond L. Anderson
NAME OF OPERATOR - PRINT
has received the prescribed training in the operation of powder operated tools manufactured by
HILTI, INC.

HILTI DX 36 M, DX 350, DX 451
MAKE MODEL

[Signature] 36091
DATE OF EXPIRATION (MONTH/YEAR) (HILTI WORK CARD NO.)

I have received the instruction in the safe operation and maintenance of powder actuated fastening tools of the makes and models specified and agree to conform to all rules and regulations governing their use.

PAIMI PROFESSIONAL INSTITUTE SIGNATURE [Signature]

Revocation of card — Failure to comply with any of the rules and regulations for safe operation of powder actuated fastening tools shall be cause for the immediate revocation of this card, and it must be surrendered upon demand of the proper authority.

Powder Actuated Tools

● General Safety Precautions:

- Inspection
- Firing
- Misfires
- Defects

Powder Actuated Tools

- Inspection:
 - It's clean
 - All parts operate freely
 - The barrel is free from obstructions

Powder Actuated Tools

● Firing

- Keep hands clear of the barrel
- 5 pounds of force against working material

Powder Actuated Tools

● Misfires

- Wait 30 seconds
- Try firing again
- Wait another 30 sec.
- Remove the cartridge
- Place in water

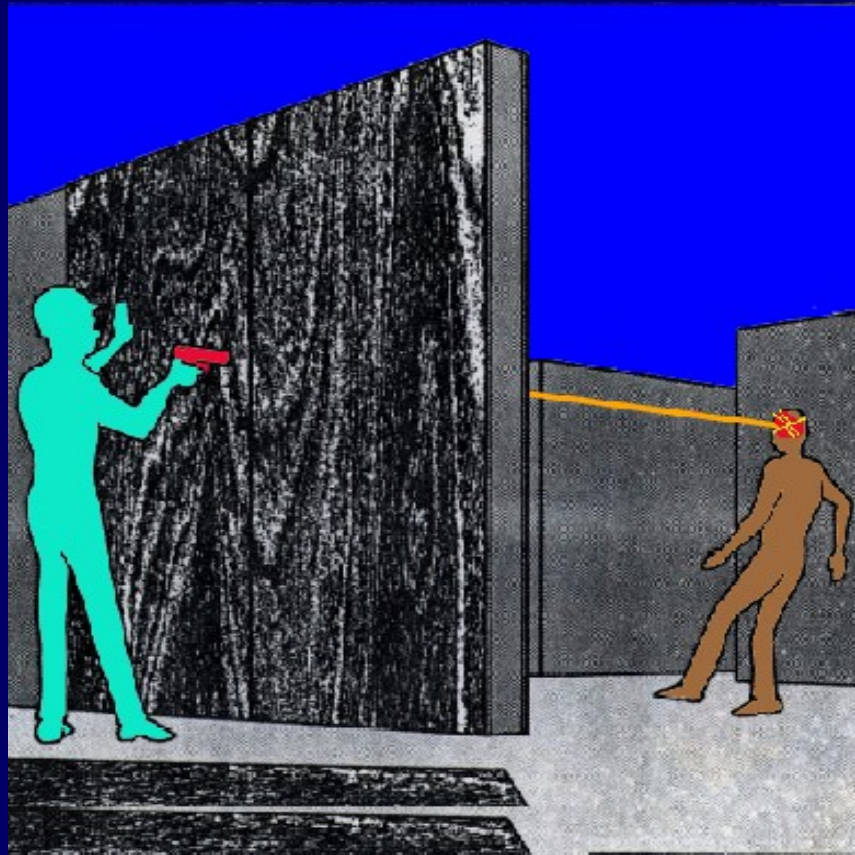
Powder Actuated Tools

● Defects

- Tag “do not operate”
- Remove from service

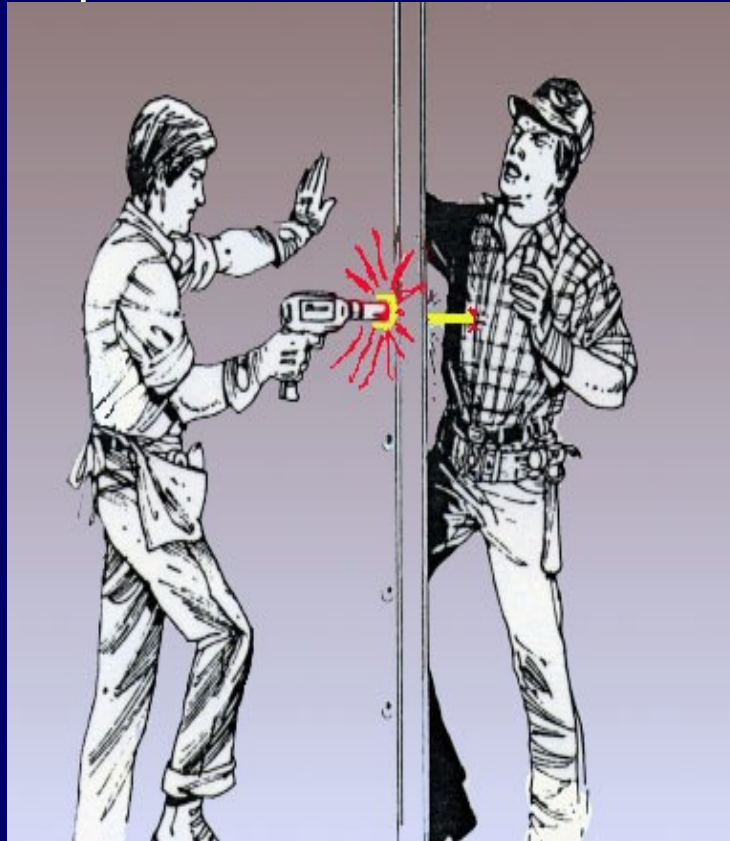
“FATAL FACT”

Employee killed when struck in head by a nail fired from a powder actuated tool. Tool operator was attempting to anchor a plywood form in preparation for pouring a concrete wall.



“FATAL FACT”

Employees performing remodeling operations building a wall. Operator was attempting to anchor plywood to a 2”x 4” stud. The nail penetrated the stud and struck the victim. One worker killed when struck by a nail from a powder-actuated tool.



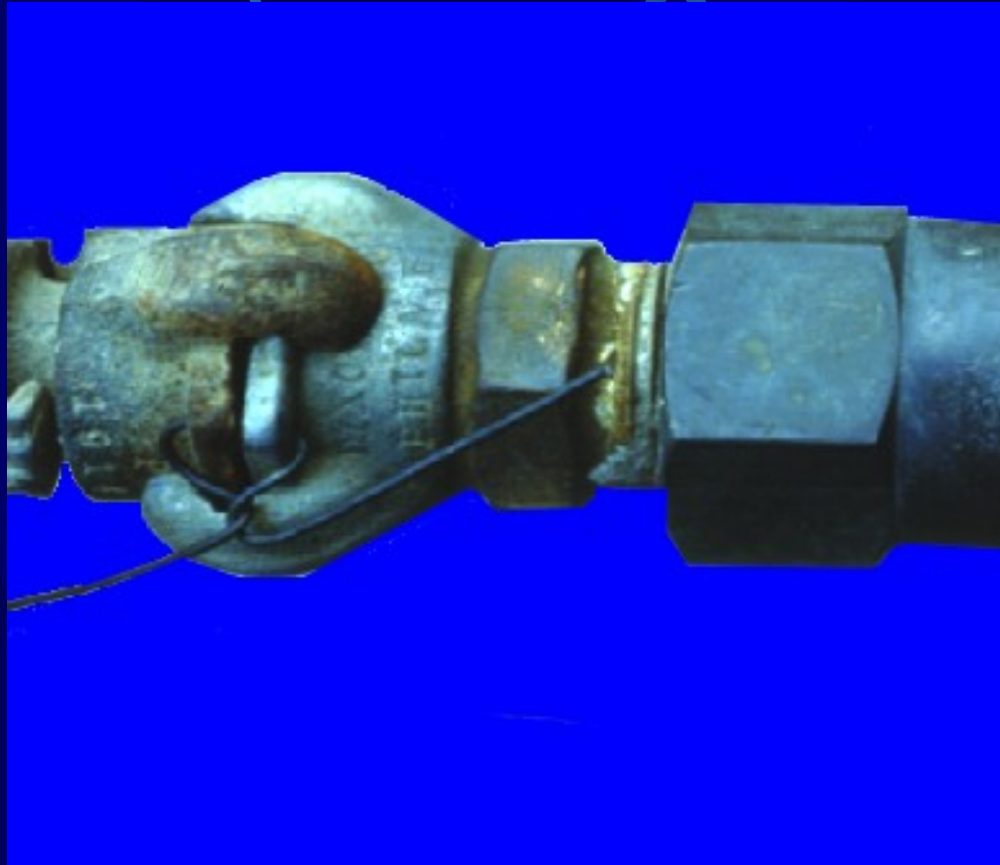
Pneumatic Tools

- Employer responsibilities for tools 243(a)
- Compressed air nozzles (for cleaning)
 - Safety tip – 1910.242 (b)
 - Not for cleaning except where dead-ended pressure less than 30 psi. Must have PPE and chip guarding
- Tool Retainers – 1910.243(b)(1)
- ***Air hose and connections must be designed for the pressures and service used in – 1910.243(b)(2)***

Pneumatic Tools

- Appropriate PPE
 - Eye Protection
 - Hearing Protection
- Other Employees
 - Screens

Pneumatic Tools (cont.)



Pneumatic Tool Connections

UNACCEPTABLE

**HOSE
CLAMP**



ACCEPTABLE



Hydraulic Tools

- Low viscosity fluid
- PPE
- Approved fire resistive fluid

Power Lawnmowers

- 1910.243(e)(1)
 - Must meet ANSI B71.1-X1968
 - Power transmission apparatus must be positioned or guarded
 - A shut-off device must be provided
 - Require manual and intentional reactivation

Power Lawnmowers

- All positions of operating controls clearly identified
- “Caution. Be sure the operating control(s) is in neutral before starting the engine”
 - On self-propelled mowers

Power Lawnmowers

- 1910.243(e)(2)
 - “Caution” – Placed at or near discharge opening

Jacks

- Hydraulic
- Ratchet
- Screw
- Lever

Jacks (cont.)

- A device that prevents the jack from extending too far
- Posted load limit – 1910.244(a)(1)
- Cribbing-1910.244(a)(2)
 - Blocks
 - Jack stands

Jacks (cont.)

- Dispersion
 - Base plate
 - Slip block



Jacks (cont.)

- Inspection
 - Constant or intermittent use – every 6 mo.
 - Before and after special work
 - Before and after abnormal load or shock
- Damaged jacks must be tagged “Out of service”

Abrasive Blast Cleaning Nozzles

- 1910.244 (b)
 - Operating valve that must be held open manually
 - Support to hold nozzle when not in use